

An Introduction to Universal Acceptance

Don Hollander – NetHui – November 2017



Universal Acceptance

UA in a Nutshell

Universal Acceptance (UA) ensures that all domain names and email addresses can be used by all Internet-enabled applications, devices and systems.

Anatomy of an email address

username@example.com

测试5@普遍接受-测试.世界

toa@ngāpukapuka.nz

- * *Username/ 测试5/toa*
 - * *Mailbox name*
 - * *Can be in ASCII or Unicode*
- * *Second level domain name (example/ 普遍接受-测试/ngāpukapuka)*
 - * *Can be ASCII or Unicode.*
 - * *Unicode can be represented as Unicode or Punycode*
- * *Top Level Domain name (.com/ .世界/.nz)*
 - * *Can be ASCII or Unicode*
 - * *Unicode can be represented as Unicode or Punycode*
 - * *Can be 2 to 63 characters long*
 - * *Can ONLY be from an authoritative list that is dynamic and has more than 1,500 choices*

What's Changed

- * More Top Level Domains (TLDs) Available
- * No longer just two or three characters
- * No longer just in ASCII
- * List of TLDs is no longer static. New names being added
- * Mailbox names also no longer in ASCII (EAI)

.aaa

.accountant

.amex

.asia

.kiwi

.ভারত

.公益

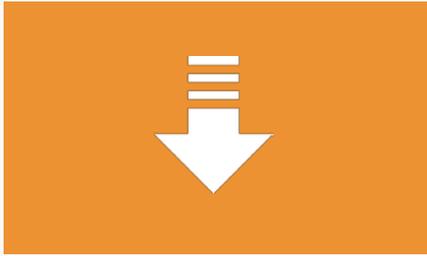
.MOCKBA

HK.

.ファッション

.

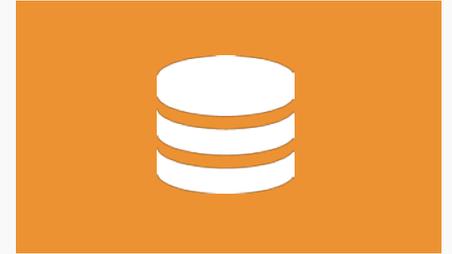
Five Verbs to UA Readiness



Accept



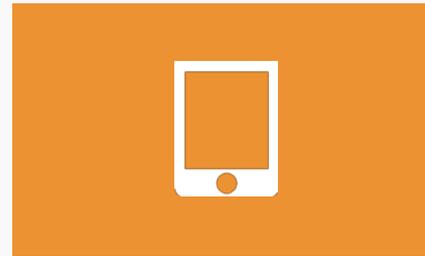
Validate



Store



Process



Display

Our Target Audiences

Doers

Developers & Systems Architects

Directors

CIOs and senior IT Management

Influencers

C suite, Thought Leaders, Government Ministers and Officials*

Why Bother

- * Enablement for community, culture, society and economics
- * Responsibility to comply with standards
- * UA results in better User eXperience (UX)
- * Provide uninterrupted support for users of new domain names
- * Reduce customer support burden
- * An extra US\$10 Billion Economic Activity
- * Millions of new Internet Users Empowered

How Hard Is It?

- * Most modern databases accept Unicode data
- * Mostly Bug Fix
- * Mostly data validation routine
- * Most major Email systems either ready or close

Who are the UASG

- * Universal Acceptance Steering Group (www.uasg.tech)
- * Internet Community of volunteers
- * Financial Support from ICANN and participants
- * Building Good Documentation
- * Performing Readiness Evaluations
- * Reaching Out to Audiences
 - * InternetNZ, TUANZ, IITP – all supporting

References

- * www.uasg.tech
- * <https://uasg.tech/documents/>
- * <https://uasg.tech/video-archive/>
- * <https://uasg.tech/announcements/>
- * <https://report.uasg.tech>
- * <https://uasg.tech/subscribe>
- * don@uasg.tech

Principles of Universal Acceptance





The process by which an email address or domain name is received as a string of characters from a user interface, file or API.

UASG Recommendations

- * User interface elements must support:
 - * Unicode.
 - * Strings up to 256 characters.
- * ASCII Compatible Encoded text (“Punycode”) in place of Unicode.
 - * Unicode shown by default.
 - * Punycode text shown *only* when it provides a benefit.



The process by which an email address or domain name – received or emitted – is checked for syntax correctness.

UASG Recommendations

- * Easiest way to ensure all valid domain names are accepted.
- * Should not occur unless required. If yes:
 - * Verify TLD against authoritative table.
 - * Query domain name against DNS.
 - * Require repeated entry of email address.
 - * Validate characters - no “disallowed” code points.
 - * Limit to few, whole-label rules defined in RFCs
 - * If string contains ‘. ’ convert to ‘.’



The long-term and /
or transient storage of
domain names and
email addresses.

UASG Recommendations

- * Apps / services should support Unicode
- * Information stored in UTF-8 whenever possible
- * Consider end-to-end scenarios before converting between A-Labels & U-Labels
 - * Consider storing in both formats
- * Clearly mark email addresses and domain names during storage



Process

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

- * Check code points not defined when application / service was created – shouldn't "break" user experience.
- * Use supported Unicode-enabled APIs.
- * Use latest IDNA Protocol & Tables documents for Internationalized Domain Names.
- * Process in UTF-8 wherever possible.

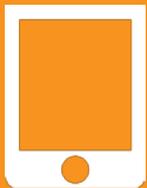


Process (continued)

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

- * Ensure numbers are handled as expected
- * Treat ASCII numerals & Asian ideographic number representations as numbers
- * Upgrade apps & servers/services together
- * Perform code reviews to avoid buffer overflow attacks

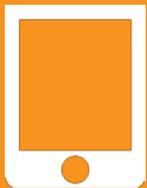


Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

- * Display all Unicode code points supported by underlying operating system.
- * When developing app/service, or operating a registry, consider languages supported.
- * Convert non-Unicode data to Unicode before display.
- * End user should see “everyone.*みんな*” vs. “everyone.xn--q9jyb4c.”

Display (continued)



Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

- * Display Unicode by default
- * Use Punycoded text *only* when it provides a benefit
- * Consider that mixed-script addresses will become more common
- * Use Unicode IDNA Compatibility Processing to match user expectations
- * Be aware of unassigned & disallowed characters

Tools & Resources for Developers

Authoritative Tables:

- * <http://www.internic.net/domain/root.zone>
- * <http://www.dns.icann.org/services/authoritative-dns/index.html>
- * <http://data.iana.org/TLD/tlds-alpha-by-domain.txt>
- * See also SAC070: <https://tinyurl.com/sac070>

Internationalized Domain Names for Applications:

- * Tables: <https://tools.ietf.org/html/rfc5892>
- * Rationale: <https://tools.ietf.org/html/rfc5894>
- * Protocol: <https://tools.ietf.org/html/rfc5891>

Unicode:

- * Security Considerations: <http://unicode.org/reports/tr36/>
- * IDNA Compatibility Processing: <http://unicode.org/reports/tr46/>

Universal Acceptance
Steering Group info &
recent developments:
www.uasg.tech

Next Steps...

- * Read the documents at www.uasg.tech/documents
 - * UASG003 – Fact Sheet
 - * UASG005 – Quick Guide
 - * UASG007 – Introduction to Universal Acceptance
 - * UASG011 – FAQs
- * Subscribe to the UASG Discussion list www.uasg.tech/subscribe
- * Get your own systems UA Ready
- * Spread the word...